

coplanar with said lower surface of said die attach pad, said upper and lower surfaces of said die attach pad being located on opposite sides of said die attach pad;

a plurality of bond wires each coupling one of said conductive leads to a corresponding bonding pad on said semiconductor die; and

a plastic encapsulation enclosing said semiconductor die, said bond wires and said lead frame, exposing at a lower surface of said plastic encapsulation said lower surface of said die attach pad and said lower surfaces of said conductive leads.

In accordance with 37 CFR § 1.121(c)(1)(ii), Appendix A provides marked up versions of the claims containing the newly introduced changes.

REMARKS

Claims 11-17 are pending. Claim 11 is amended.

The Examiner rejected Claims 11-12 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,157,480 ("McShane"). The Examiner states:

McShane et al. teaches substantially all of the structural features recited in the claims wherein McShane shows a leadframe having leads 22 and die pad 15 and wherein figure 1 shows leads 22 having a lower surface 18 substantially coplanar with pad 15, bond wires 38 and encapsulant 17 is shown exposing a lower surface of the lower surface of the die pad and leads. Solder balls 26 are shown as recited in figure 1.

Applicants respectfully traverse the Examiner's rejection. As amended, Claim 11 recites:

a lead frame comprising (a) a die attach pad supporting said semiconductor die on an upper surface of said die attach pad, and (b) substantially planar conductive leads positioned around an outer periphery of said die attach pad, wherein each

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of said conductive leads having a lower surface that is substantially coplanar with said lower surface of said die attach pad, said upper and lower surfaces of said die attach pad being located on opposite sides of said die attach pad;

As discussed in Applicants' Specification, at beginning at page 5, line 8 to page 7, line 2, and shown in Figs. 2a, 2b, 3a and 3b, substantially planar leads can be created from a panel of lead frames (e.g., panel 110) which can be individually singulated after encapsulation (e.g., step 370 of Fig. 3b), thus allowing a streamlined assembly process. Such substantially planar leads are different and unobvious from the structure shown in McShane's figure 1. McShane summarizes its invention, in pertinent part, as follows:

Each lead has a first contact portion and a second contact portion separated from the first contact portion by an intermediate portion. A package body encapsulates the semiconductor device die and intermediate portions of the plurality of conductive leads. First contact portions of the leads are exposed on a surface of the package body while second contact portions are exposed on a side of the package body which adjacent the surface.

(McShane at col. 1, lines 59-63)

To modify McShane in the direction of Claim 11 would destroy McShane's utility of having, for each lead, two contact portions exposed respectively at a side surface and a lower surface. Accordingly, Applicants respectfully submit that Claims 11 and 12 are allowable over McShane. Reconsideration and allowance of Claims 11-12 are requested.

The Examiner also rejected Claims 11, 14-17 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Yamaguchi. The Examiner states:

Yamaguchi teaches substantially all of the structural features recited in the claims wherein Yamaguchi shows a leadframe having leads 56 and die pad 52 and wherein figure 5b shows leads 56 having a lower surface coplanar with pads 52, bond wires 3. Encapsulant 55 is shown exposing a lower

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surface of the die pad and leads. A plurality of packages are shown in figure 4a and said lead frame is shown formed on a metal plate or panel.

Applicants respectfully traverse the Examiner's rejection. The limitations of Claim 11 discussed above with respect to McShane are also different and unobvious from the structure shown in Yamaguchi's figure 5(b). With respect to figure 5(b), Yamaguchi discloses each lead having a portion that is exposed to a lower surface of the encapsulation and a portion that is exposed to the upper surface of the encapsulation (See also, Yamaguchi at col. 4, lines 18-58). As in McShane, modifying Yamaguchi in the direction of Applicants' Claim 11 would destroy Yamaguchi's utility of having the greater of the two thickness' of the leads to define the thickness of the package (Yamaguchi's col. 2, lines 45-63). Accordingly, Applicants respectfully submit that Claims 11, and 14-17 are each allowable over Yamaguchi. Reconsideration and allowance of Claims 11, and 14-17 are therefore requested.

The Examiner indicated allowable subject matter in Claim 13, but for its dependence from a rejected base claim.

For the above reasons, Applicants submit that all pending claims (i.e., Claims 11-17) are allowable. If the Examiner has any questions regarding the above, the Examiner is respectfully requested to telephone the undersigned Attorney for Applicants at 408-453-9200.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231, on March 8, 2001.

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APPENDIX A

The following is a "marked-up" copy of Claim 11, showing the changes that the accompanying submission makes to Claim 11:

11. (Amended) An integrated circuit package for accommodating a semiconductor die, comprising:

a lead frame comprising (a) a die attach pad supporting said semiconductor die on an upper surface of said die attach pad, and (b) substantially planar conductive leads positioned around an outer periphery of said die attach pad, wherein each of said conductive leads having a lower surface that is substantially coplanar with said lower surface of said die attach pad, said upper and lower surfaces of said die attach pad being located on opposite sides of said die attach pad;

a plurality of bond wires each coupling one of said conductive leads to a corresponding bonding pad on said semiconductor die; and

a plastic encapsulation enclosing said semiconductor die, said bond wires and said lead frame, exposing at a lower surface of said plastic encapsulation said lower surface of said die attach pad and said lower surfaces of said conductive leads.